Gamification of learning within a problem solving context

individualised learning

adaptive testing

confidence and proficiency self-ratings

FYE 2015 Project
Creating a path to success by providing avenues for individualised learning and catering for individual learning needs

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Pathways, avenues & individualised learning

68037 Physical Modelling

FYE13

Focused Learning Support in Physics. (Just-in-time, individualised, language focused student learning support)

FYE14

Feeding back to feedforward: Using targeted language interventions to support student learning in first year physics

FYE15

Creating a path to success by providing avenues for individualised learning and catering for individual learning needs

today

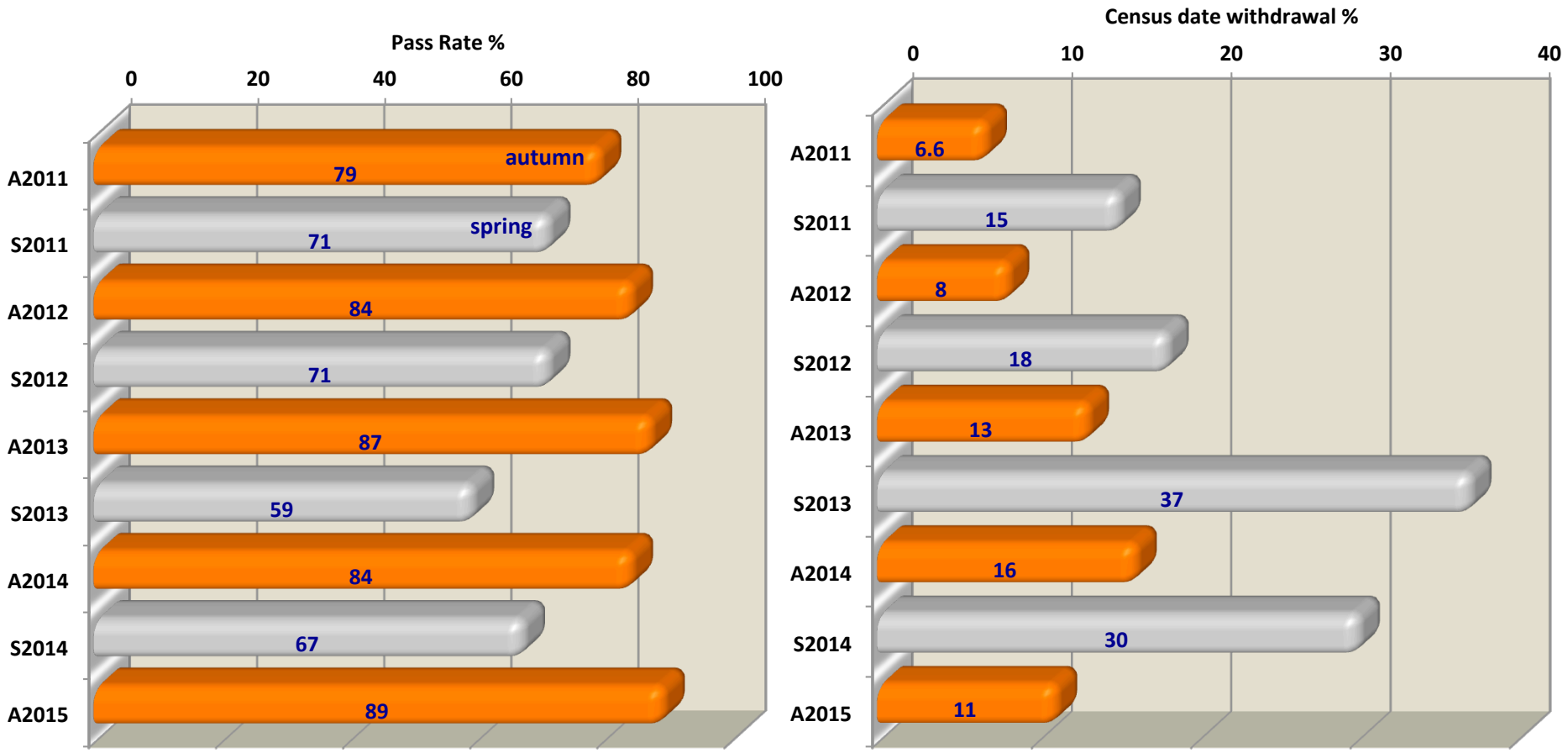
Means & Tools

Progress analytics (beta)
Individualised mails
NEB, @risk

Progress analytics (alpha)
Multi-parameter mails

Progress analytics 0.1
Multi-parameter feedback
Social Media (UCROO)
Adaptive Learning, Transition

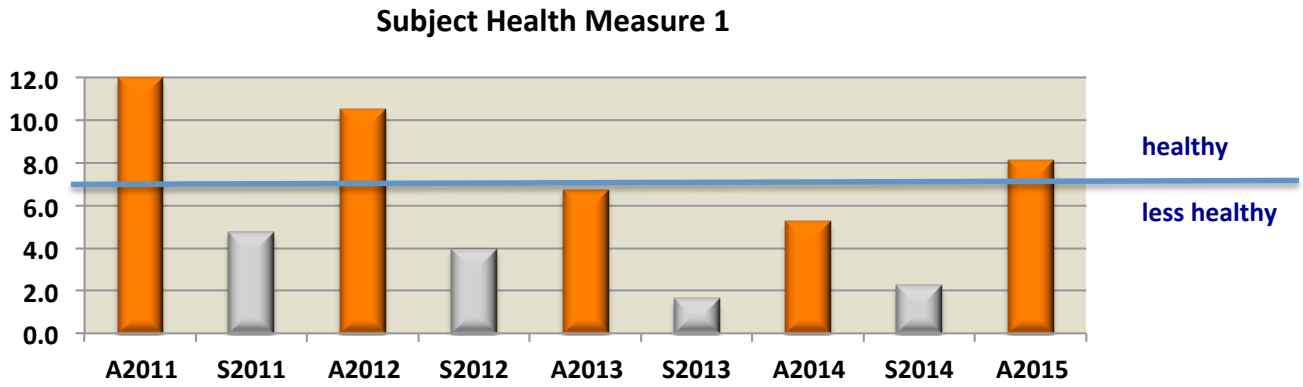
FYE 2015



68037 Physical Modelling

1-sem core for FEIT students, taught in Science

FYE 2015



Subject Health Measure 1 (pass rate : withdrawal rate)

Students' expectation to succeed @ enrollment	**enrollment #**
Students' concerns @ census date	**withdrawal #**
Students' expectations after census date	**enrollment #**
Students' validation of expectations @ end of semester	**pass rate**

Adaptive Learning, Transition

Aim

- smoother transition
- individual pathways to learning

- … followed up by personalised feedback informed by learning analytics

Approach (adaptive learning)

1 large summative assessment:
(proficiency, not just performance)

- incremental steps guided by students' own pace
- more capable students -> larger steps
- permission to excel in areas of interest and be rewarded for it
- gamification, competitive

final exam optional

Adaptive Learning, Transition

Transition - student perspective

(compared to pre-uni and other traditional uni assessments …)

Past experience:

- time-limited (multiple deadlines throughout semester)
- 1-time performance (class test, repeat mastery test, final exam)
- feedback assessment triggered

Transition supporting experience:

- self-paced "deadlines", very small summative assessment steps (24/7)
- opportunity to compensate for deficiency in other areas
- gamification of progress
  (challenge, loose, make up for mistakes, succeed, move level up)
- immediate feedback, adaptive progress, feedforward feedback

Adaptive Learning, Transition

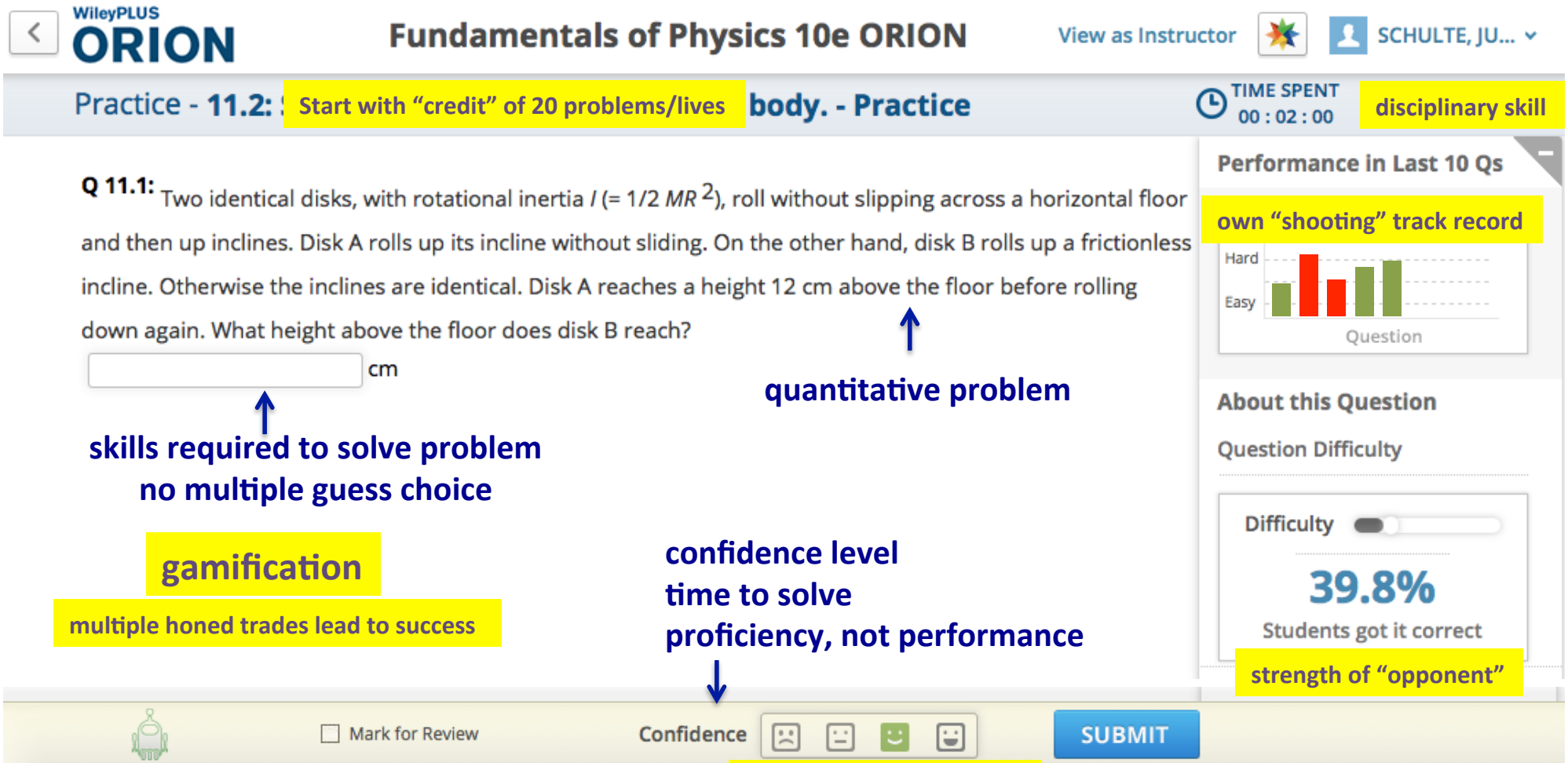
Transition - academic perspective

(compared to pre-uni and other traditional uni assessments …)

Transition supporting experience:

- **self-paced learning**
- **self-testing**
- **approaching new material and re-approaching past material**
- **learning analytics informed personalised feedback to feedforward**
- **very low intermediate stakes , high end stake**
- **highly competitive and rewarding accordingly**

FYE 2015 Adaptive Learning – Student's View



Next round/level of problems depends on how this round has been completed

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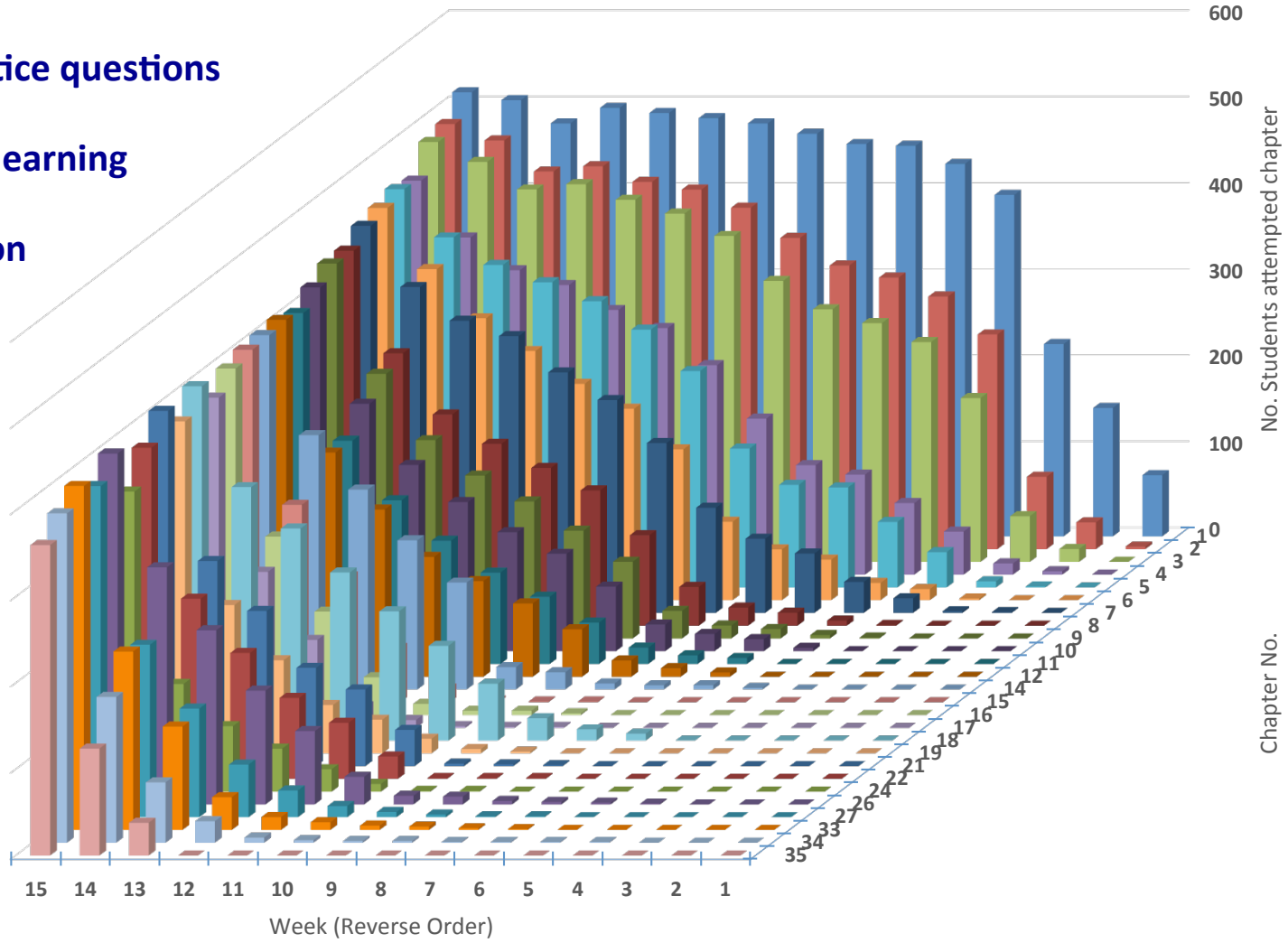
Gamification

more practice questions

control of learning

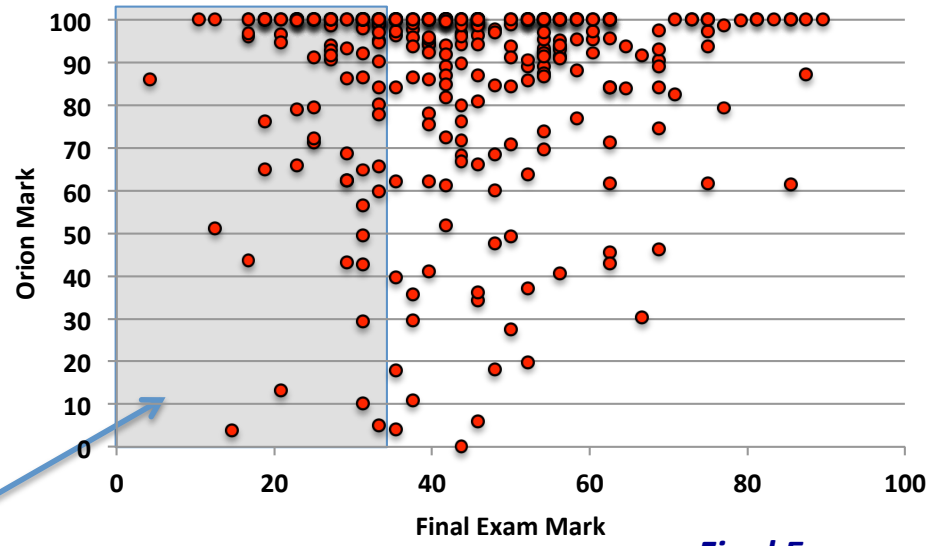
gamification



FYE 2015 Improved Learning – Improved Success

"Orion Mark"

Adaptive learning proficiency: 80% proficiency = 100% Orion Mark



Likely fail without adaptive learning

Final Exam	
Optional	72% participation
Opt out	28% opt out
Opt out pass rate	77%